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A FEW ICAL COMMENTS

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FRAMINGHAM FOUNDRIES, INC.
Framingham, Mass.

We have already had more than
0 hours' service using steel
t abrasive, and have every
son to believe we will get as
more before our Norbide
le is worn."

SPRINGFIELD FOUNDRY CO.
Springfield, Mass.

er nine months' service
rbide Blast Nozzles are
giving good satisfaction."

THE H. B. SMITH COMPANY
Westfield, Mass.

to the very slight wear
rbide Blast Nozzles
hours' service we
life of over 2000 hours
y will have to be
We use silica sand."

HEMONT CASTING CO.
Worcester, Mass.

has been in continuous
ice October 19th, 1933
have had 1568 hours'
using silica sand as the
e."

& PRATT MANUFACTURING CO.
Watertown, Mass.

Norbide Nozzle was run
rs, using sand as an
e, at 80 pounds air
."

EGGS MANUFACTURING CO.
Detroit, Michigan

Norbide Nozzles last us
ately 6 months, using
7."

Instructions for Selection and Use of NORBIDE PRESSURE BLAST NOZZLES

1. Most iron nozzles, even though undersize when purchased, quickly become oversize when put into operation.

Norbide Nozzles are made to resist wear and should be selected of the proper size to begin with. For example, to replace a $\frac{3}{16}$ " iron nozzle a $\frac{7}{32}$ " or $\frac{1}{4}$ " Norbide Nozzle should be used. To replace a $\frac{1}{4}$ " iron nozzle a $\frac{9}{32}$ " or $\frac{5}{16}$ " Norbide Nozzle should be used. To replace a $\frac{5}{16}$ " iron nozzle a $\frac{3}{8}$ " Norbide Nozzle should be used. For larger sizes it is usually satisfactory to replace the iron nozzle by a Norbide Nozzle of the same size.

2. In replacing a tungsten carbide or any other long life nozzle with a Norbide Nozzle select one of the same size.
3. Be sure to maintain a good rubber gasket or washer as provided against the entrance end of the Norbide Nozzle to protect from wear the steel jacket or adaptor in which the Norbide Liner is mounted. Only the Norbide Liner is guaranteed for the service stated in the guarantee.
4. Inspect the rubber gasket or washer after every ten to twenty hours of operation.
5. When installing an outside bayonet type holder such as is shown on page 2 it is important to cut the end of the hose square—that is at right angles with its axis. To do this easily use a hack saw in an ordinary carpenter's mitre box. It can also be done on a disc sander by filling the end of the hose with a wooden dowel and properly guiding it to square it up.

NORTON COMPANY, Worcester, Mass.

New York	Chicago	Detroit	Philadelphia	Pittsburgh
Hartford	Cleveland	Hamilton, Ont.	London	
	Paris	Wesseling, Germany		

STANDARD NOZZLES ARE ADVANTAGEOUS

The use of standard nozzles and fittings such as are shown on page 2 is recommended whenever possible. The standard parts are stocked for prompt shipment.

The special types of nozzles shown on pages 3 and 4 are not stocked and therefore some delay in delivery must be anticipated.

Outside Bayonet Type Hose fittings are recommended with Norbide Pressure Blast Nozzles for the following reasons:—
(a) They are light and easy to apply.
(b) They are not subject to wear and will last indefinitely. (c) They protect the nozzle from abuse. (d) They permit the nozzle to be removed with ease for inspection of the gasket and in case of clogging.

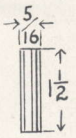
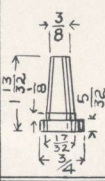
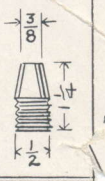
Three gaskets are supplied with each nozzle.

For instructions on the selection and use of Norbide Nozzles see page 6.

Wrench Facilitates Nozzle Removal

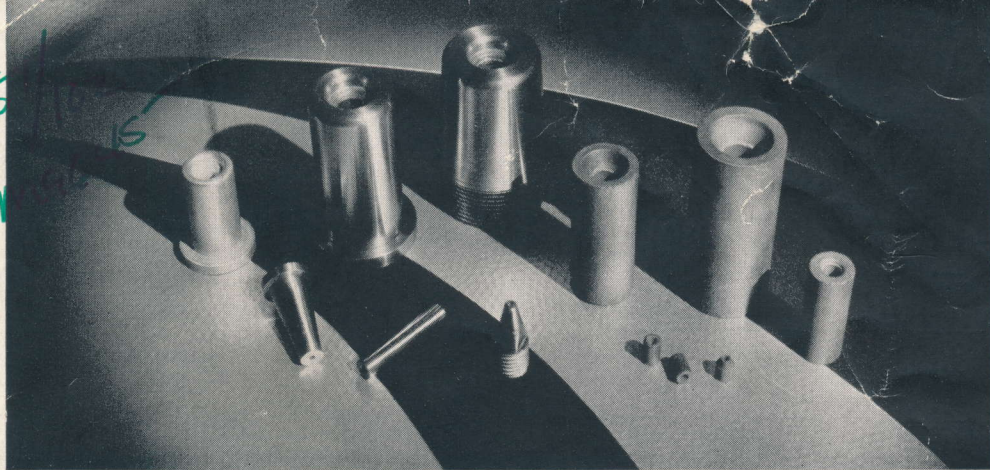


A special wrench for use with the bayonet type nozzle—a slight push and a twist quickly loosens the clamp and permits the removal of the nozzle for replacement of the gasket or to clear an obstruction

ADAPTOR NO →		E 35620	E 34345	E 34346	E 36
NOZZLE					
NUMBER	ORIFICE DIA.				
1	1/16"	Shaded	Shaded	Shaded	
1C	1/16"	Shaded	Shaded	Shaded	
1 1/2	3/32"	Shaded	Shaded	Shaded	
1 1/2 C	3/32"	Shaded	Shaded	Shaded	
2	1/8"				
3	3/16"				
3 1/2	7/32"				
4	1/4"				
4 1/2	9/32"				
5	5/16"				
6	3/8"		Shaded blocks orifice diameter in each type of nozzle		
7	7/16"				
8	1/2"				

List Price includes nozzle and outside dimensions form to nozzle in **WHEN ORDERING** give

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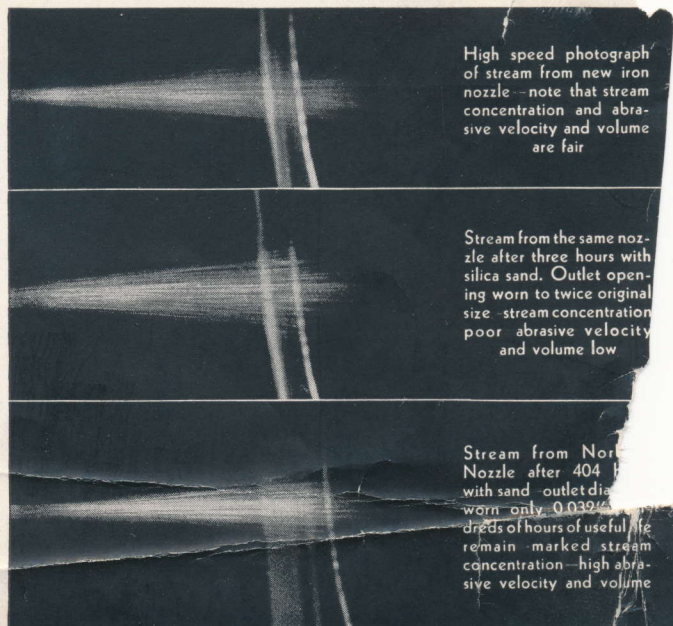
*A variety of Norbide Nozzles
and at the right of the picture
a group of Norton Boron
Carbide Liners*

Why You Should Use **NORBIDE PRESSURE BLAST NOZZLES**

1. They give more service per dollar cost than any nozzle now available.
750 hours when used with silica sand.
1500 hours when used with steel grit or shot.
This is the guaranteed minimum service when metal adaptor is properly protected with rubber gasket as provided in instructions (see page 6). During this time enlargement at the outlet end will not increase the size to more than one and one half times the original orifice diameter.
2. They decrease air consumption from 10% to 20% as compared with iron nozzles.
3. They maintain a stream contour and abrasive velocity that improves blasting efficiency. (See illustrations below.)

NORBIDE is the registered trade mark for products made of Norton Boron Carbide (B_4C)—an entirely new material developed by the research laboratories of Norton Company.

NORTON BORON CARBIDE is the hardest material ever produced by man for commercial use—is exceeded in hardness only by the diamond. A product of the electric furnace, it is made by fusing two commonplace materials—coke and boric acid—at tremendously high temperatures. Norton Boron Carbide may be crushed to powder and used as an extremely hard abrasive (for jobs previously possible only with diamond dust); or it may be molded at tons of pressure and thousands of degrees of heat into products that will resist wear to an unbelievable degree. In its molded form as used for pressure blast nozzle liners, it is of a dense, homogeneous structure and lighter than aluminum.



High speed photograph of stream from new iron nozzle—note that stream concentration and abrasive velocity and volume are fair

Stream from the same nozzle after three hours with silica sand. Outlet opening worn to twice original size—stream concentration poor—abrasive velocity and volume low

Stream from Norton Nozzle after 404 hours with sand—outlet diameter worn only 0.039 inches—hundreds of hours of useful life remain—marked stream concentration—high abrasive velocity and volume

*High speed photographs by Prof. Harold E. Edgerton
and Kenneth J. Germeshausen*